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NOTES FROM THE JOURNAL OF A BOTANIST IN EUROPE.

BY W. S. FARLOW, M.D.

PART III. GENEVA AND THE ALPS.

AFTER a month of wandering through Switzerland and northern Italy, I have, at length, settled in this charming city for the purpose of more systematic botanical study than one is likely to undertake in such resorts as Grindelwald and Zermatt. I arrived in Switzerland from Munich about the middle of July, and reached Grindelwald on the 20th, when the alpine vegetation was in full bloom, and I think I never saw such a display of wild flowers as was then to be found in almost all the high pastures, or Alps proper, and, still higher up, on exposed rocks just below the snow line. For the European botanist, who is only in search of rarities, Zermatt is much richer than Grindelwald. In general, Dauphiny is more favorable for the botanist than Switzerland itself, but to an American, who must, at least, see Switzerland and who wishes to get a good general idea of the alpine flora at the same time, no place seems to me better adapted than Grindelwald. The valley is easily and quickly reached and, only a few steps from the village, is the moraine of the lower glacier which, by a constant recession (according to the guides) for twenty years, has left exposed a mass of rocks on which, but more particularly along their border, may be found numerous alpine and sub-alpine plants. Amongst the most beautiful and common, are *Linaria alpina* DC. and *Epilobium Fleischeri* Hochst. which attract the eye of non-botanical travellers, and even of the guides themselves. To the left of the moraine (looking up) and along the path leading to the *mer de glace* one can without fatigue collect alpine plants to his heart's content, including even the famous Edelweiss, *Leontopodium alpinum* Cass., unless he arrives a little late in the season, in which case, every trace of it will have disappeared under the devastations of guides and tourists. For my part, I can't see the least beauty in the flower, and it was a great annoyance to have a handful thrust into my face every few minutes by some enterprising, but not over-polite, Swiss boy. It does very well, how-

ever, for the guides to wear a sprig in their hats, it gives them such a decided alpine look and, then, it is so romantic. Every one has heard about the chamois hunters who imperil their lives in gathering the Edelweiss growing about half-way up steep precipices, nobody knows how many thousand feet high, all for the sake of some beauteous maiden. At present, maidens of the above class have probably retired to the remotest valleys; at any rate, they are not met with in Grindelwald. But Edelweiss may be had without great risk of life or limb; for while crossing the Simplon I had only to step out of the diligence to pick specimens of it growing on some rocks near the road. But, to return to our path to the *mer de glace*—along the lower portion a most beautiful effect is produced by the quantities of *Phalangium ramosum* Lam. and *Astrantia major* L., growing together, the latter proving that even an umbellifer can be beautiful. Above, on the mountain, *Aconitum Napellus* and *A. lycoctonum*, with numerous Caryophyllaceæ, attract the attention of the traveller.

No one who is so fortunate as to be in Grindelwald in July, or the beginning of August, should fail to ascend the Faulhorn. After emerging from the forest, uninteresting, except from a few *Camp-anulæ*, to all but lichenologists, one finds in abundance the beautiful alpine rose, *Rhododendron ferrugineum* L., which the ladies are so fond of fastening in bunches to the ends of their alpen-stocks; and, growing with it in abundance, but flowering a little later, the odd *Gentiana punctata* L. After passing the châlet, the really alpine flora is first seen in a meadow blue with *Gentiana Bavarica* and *G. verna* mixed with Androsace, while the most beautiful *G. acaulis* occurs farther on. Every step discloses new beauties, the fragrant *Nigritella angustifolia*, *Violæ*, *Primulæ*, *Semperviva*, *Saxifragæ* and composites without end, till the climax is reached at a little knoll not far from a small black looking lake, just under the snow fields, which is covered with *Soldanella minima* Hoppe. The nodding of the beautiful little purple-blue corollas, the distant tinkling of hundreds of bells from a large herd in the alp below, the bare black rocks and snow ahead, and behind the magnificent mass of the Wetterhorn, from which one hears constant avalanches, all form a picture which no one is likely to forget.

The proper time for seeing the alpine flowers is from the middle of July till the middle of August, better however in July. Those who arrive late in August, as do most of the Americans, will search

in vain, even in the richest localities, for a glimpse at the wonderful profusion and brilliancy of the mountain flora. Single specimens of many and some even rare species may then be found, but the flowers will have ceased to be a feature of the landscape. The lichenologist will find superb specimens of *Evernia divaricata* in fruit in the forest between Grindelwald and the Rosenlauri glacier.

I regret not having had time to explore the St. Gothard for lichens which are said to be interesting in that region. The rocks below the celebrated Devil's Bridge were covered with *Gyrophoræ*, mostly common species, however. The richest botanical field of Switzerland which the American is likely to visit is Zermatt, at the foot of Monte Rosa. Here, there is enough to catch the eye of the traveller, but the species for which Zermatt is particularly famed must be diligently sought, and one who expects to examine this region profitably must make up his mind to stay at least a week. Interesting plants are found on the road from Visp to Zermatt and, at least, the first half of the way, as far as St. Niklaus, had better be made on foot for that reason. The Riffelberg is interesting in the season but, by the middle of August, not very much is to be found. The *Pinus cembra* of this mountain, and the larches whose trunks are gay with *Evernia vulpina*, are certainly worth seeing.

As far as botany is concerned, Chamounix is very uninteresting, although the lichens are tolerably numerous. The Flegère is almost stupid in its monotony, and the only plant of any interest is the fern *Allosorus crispus*, abundant just before entering the forest. Attracted by the name "le Jardin," I started off early one morning expecting to return laden with treasures. The scenery was magnificent, but the so-called garden is destitute of all but common alpine plants, such as *Gentiana punctata*, *G. Bavarica*, *Linaria alpina*, etc. The excursion on the whole is fatiguing over the *mer de glace* as far as can be seen from Montanvert, then, round a corner of the *Aiguille du moine* to the Têlâfère moraine, then a horrid climb up the moraine relieved only by the bright flowers of *Adenostyles albifrons*, and across the Têlâfère glacier to the Jardin; in all, a walk of nine hours over snow, ice and moraines.

Let me now say a word about the books a traveller had better take with him to the botanical districts. I started with Koch's "Taschenbuch der Deutschen und Schweizer Flora," which I found

to answer the desired object very well, although it is somewhat antiquated. It is not in print, however, and can only be obtained at second-hand bookstores of the large cities. I had the misfortune to lose my "Taschenbuch" and had some trouble in finding a substitute at Lucerne. Let me warn all your readers against a wretched "Taschenbegleiter des Alpenclubisten" by Dr. R. T. Smiler. One might just as well try to find a plant in Bradshaw's "Railway Guide." At last, in Geneva, I found an excellent little guide called "Flore analytique de la Suisse" by P. Morthier of Neuchâtel, second edition, 1872. It is compact and, if only decently bound, instead of being in paper covers like all continental books, would be as convenient as possible. The orders are arranged according to the natural, but the key on the Linnæan, system. The author, it must be remarked, has a very neat way of getting over difficulties in the larger and more complicated genera. The principal species are clearly given and, at the bottom of the page, a note like the following: Between species A and B are several hybrids known as species C, D, E, etc., of different authors. This might certainly be called eliminating difficulties.

Geneva, although long known as the residence of distinguished scientific men, is not, at present, so much frequented by Americans who wish to pursue science as the German University towns. The Academy partakes to a large degree of the nature of a German gymnasium. This is owing, partly, to the absence, until recently, of good practical laboratories which are so common in Germany, and to which that country is indebted for the large influx of foreign students. Recently, however, the new Academy buildings have been finished in a very substantial manner, and the number of laboratories, chemical, physical, anatomical, physiological, botanical, zoological, etc., is quite astonishing. It is said that a part of the large sum bequeathed to the city by the late Duke of Brunswick is to be devoted to improving the Academy and raising it to the rank of a University. I have no doubt this will soon be done, and then Geneva may attract American students, as the beauty of its situation and the opportunities for learning French are two very decided advantages.

Botany is, at present, represented here by M. Alphonse de Candolle and his son M. Casimir and Dr. Johann Müller, called Argoviensis, to distinguish him from the numerous other Müllers, distinguished in botany and zoölogy. M. Edward Boissier re-

sides near the city, and the aged M. Duby a short distance up on the lake. Besides these is a M. Thurie, professor of vegetable physiology. The laboratory of the latter has been recently fitted up. The botanical garden, although forming a very pleasant playground for children and their nurses, is hardly what one would expect from a city in which three generations of De Candolles have lived. It is whispered that the city government prefers to use it as a propagating garden for the supply of the public squares and parks.

In herbaria the city is very rich, there being, at present, three distinct large collections; the De Candolle herbarium opposite the cathedral; the collection of M. Boissier at his residence; and that of Delessert formerly in Paris. The latter is not yet arranged and will be for some time particularly inaccessible. The De Candolle herbarium is in two divisions; the first, from which the earlier volumes of the *Prodromus* were written, remains as a classic memorial of that work, no additions or alterations being made in it, but all purchases and exchanges are inserted in the second herbarium, which contains the materials of the later volumes.

The curator of the herbarium is Dr. Müller, whom I found on my arrival resting from the fatigue arising from his work on Brazilian Rubiaceæ, by devoting himself to his favorites the lichens. With his assistance I was enabled to study the lichen flora of Geneva. This excellent botanist and most amiable man has an extensive general knowledge of all branches of botany, and does not turn up his nose at the smaller plants as beneath his notice. In his knowledge of lichens he has few equals in Europe, although most of his time is given to the study of phænogams. The Vegetations-punkt mania does not prevail at Geneva as in Germany, where it affects many of the younger botanists to such an extent that they are quite unfitted for practical work. The Germans are constantly making the mistake that everything microscopic is important, in fact more important than anything else.

The flora of Geneva is exceedingly interesting, the city being situated at a point where a northern and southern flora unite. It was too late to study the phænerogams when I arrived, but the lichens are always in season. A short hour from the city is the Pas de l'Echelle leading to the passage between the Grand and Petit Salève. Here is the original station of a number of

species of lichens. Along the path one sees rocks and stones bearing marks of the chisel. These were made by Dr. Müller who points out the identical spot where the first *Amphiloma granulosum* was found by him, as well as other new species. Everywhere lichens abound. In the passage above, between the Grand and Petit Salève, the rocks of the two sides bear different species: to the left, the rare *Toninia Boissieri*, *Lynalissa Salivensis* and *Omphalaria pulvinata*, and to the right, many *Verrucariaceæ*. At present, more than a thousand species of lichens have been found in the vicinity of Geneva, a very large number for a local flora. In one spot a number of holes have been drilled into the rocks, and Prof. DeBary one day suggested jokingly, that Dr. Müller was going to blow up the mountain to see if he could not find some new species inside. To show how thoroughly Dr. Müller has explored this region (pointing to a ledge of rocks) he said that he began at one end one Sunday, and examined a certain tract marking the place where he left off, and returned on successive Sundays until the whole ledge was explored. The Eldorado of lichenologists is near the summit of the Grand Gorge on the Grand Salève. Between the fallen boulders at the foot of the mountain is found *Cyclamen Europæum* in abundance, and also the rare fern *Asplenium Halleri* which generally grows with *Solorina saccata*.

On the opposite side of Geneva from the Salève and farther distant are the highest summits of the Jura, the Dôle, Colombier and Reculet. Of these the Dôle is the most accessible. The ascent is made from St. Cergues about three hours distant from Nyon on the lake. The excellent road ascends gradually to St. Cergues and affords magnificent views of the lake and Mt. Blanc. It is from this route that one is best enabled to form a correct idea of the height of the latter mountain which seems to rise higher and higher, while the lower mountains, as the Salève and the Mole sink gradually until they are lost in an undulating plain. At St. Cergues the traveller finds himself in a very primitive region. The doors of the rooms at the inn are destitute of bolts or locks. There being no fire or possibility of a fire except in the kitchen I took refuge in that apartment and looked on in astonishment while the landlady made soup of bread, water and garlies. The "anything warm that I wanted" turned out to be cold Swiss sausage. All that I can forgive, but why would the

landlady stand by me while I was eating, and ask if I liked the food? Of course, I had to say it was delicious. The next day, with a gendarmes as a guide, carrying an enormous basket with a very little luncheon, I went to the summit, passing through large forests of *Abies excelsa*, and pastures full of the beautiful *Gentiana ciliata*. The rocks of the summit were covered with lichens, the most striking of which were *Biatora rupestris*, var. *calva*, *Verrucaria plumbea*, *V. Dufourii*, *Blastenia Agardhiana*, *B. nubigena*, *Caloplaca chalybæa* and *Biatora Jurana*. Having disposed of our luncheon, I soon managed to fill the basket, my box, and all my pockets to overflowing, to say nothing of two or three leaves of *Cirsium ferox* covered with a *Puccinia*, and several large agarics which I carried in one hand. The gendarmes did not seem to mind the *Cladoniæ* and *Parmeliæ* much: but I thought his countenance fell as he saw the *Verrucariæ* and other mineralogical plants going into the basket which I kindly allowed him to carry. Returning to Nyon in the omnibus I managed to incommode my neighbors by the specimens in my coat pockets. In my lap was a heap of *Cladoniæ* and *Peltigeræ*, and a worthy Switzer opposite got his feet entangled in the strap of my botanical box, where were my choicest specimens, and I soon saw it moving towards the door bottom upwards with the cover open. But every one was restored to good nature by a young lady, just from Paris, who distributed a package of candy amongst the company.

An interesting locality for lichens is along the Arve above Geneva; but, at the time of my visit, the stones on which they grow were under water. Only in spring can one collect there with advantage. During his excursions in the higher Alps, M. Casimir De Candolle has made some interesting discoveries with regard to the height at which lichens grow. He found on the summit of Monte Rosa (15,217 ft. high) *Amphiloma murorum*. The upper part of the Schreckhorn (13,386 ft. high) is covered with lichens; so far as is known, however, only common species.